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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,160

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Akira Tsuboyama

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EXAMINER

WILSON, MICHAEL H

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/577,160	Applicant(s) TSUBOYAMA ET AL.	
	Examiner MICHAEL WILSON	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
 4a) Of the above claim(s) 4,5,9,11 and 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 8, 10 and 12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20060426; 20071226</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

Species A, a binuclear copper coordination compound,

Species B, a trinuclear copper coordination compound.

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

2. The claims are deemed to correspond to the species listed above in the following manner:

Species A: claims 1, 2, 3, 6, 8, 10, and 12.

Species B: claims 4, 5, 7, 9, 11, and 13.

No claims are generic.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: The luminescent device of claim 1 and dependents contain a binuclear copper coordination compound as the special technical feature, while the luminescent device of claim 4 and dependents contain a trinuclear copper coordination compound as the special technical feature. Therefore the claims lack unity *a priori* because they lack the same special technical feature.

3. During a telephone conversation with Mr. Saxon's office on 17 April, 2009 a provisional election was made with traverse to prosecute the Species A, claims 1, 2, 3, 6, 8, 10, and 12. Affirmation of this election must be made by applicant in replying to this Office action. Claims 4, 5, 7, 9, 11, and 13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

5. Claim 1 is objected to because of the following informalities:

Regarding claim 1, it is suggested to change "uses as" to --comprises-- because it is unclear if uses is an open or closed language (i.e. comprise or consist).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2 and 3 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 3, the recitations of “N is an imine on a heteroaromatic ring” renders the claim indefinite. Only one of the two nitrogen atoms in formula (3) is part of a ring structure. Both nitrogen atoms can not be an imine on a heteroaromatic ring as recited in the claim and still meet formula (3).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 2, 6, 8, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Yam et al. (Photophysics and photochemical reactivities of organocopper(I) complexes. Crystal structure of $[\text{Cu}_2(\text{PPh}_2\text{Me})_4(\mu, \eta^1\text{-C}\equiv\text{CPh})_2]$).

Regarding claims 1, 2, 6, 8, and 10, Yam et al. disclose a binuclear copper(I) complex (compound 2, page 2889). The reference discloses the complex emits light in the solid state at both room temperature and 77K (page 2890, first column, lines 31-33). Complex 2 meets instant formulae (1), (2), and (6) wherein N is part of a pyridyl ring, and R1, R2, R1', and R2' are trimethylsilyl groups. The reference also discloses the Cu...Cu distance of 2.4 angstroms (page 2890, first column, lines 5-6) and that the copper ions are monovalent (page 2889, first paragraph). The copper complex is the only positive limitations for the luminescent device recited in the present claims. Therefore given that Yam et al. discloses the copper complex as luminescent in the solid state, the solid of Yam et al. meet the present claim limitations.

Regarding claim 12, Yam et al. disclose all the claim limitations as set forth above. Additionally the reference discloses that the copper complex is luminescent as a solid (page 2890, first column, lines 31-33). This solid meets the present limitations of a luminescent layer. The percent composition of the disclosed solid (layer) is not specifically disclosed; however percentage above zero is a part of 100%. Therefore the present claim limitation is also considered to be met.

10. Claims 1, 3, 8, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Engelhardt et al. (Synthesis and structure of copper(I), silver(I) and zinc(II) amides $[\text{Cu}_2(\text{mpsa})_2]$, $[\text{Cu}_6\text{X}_2(\text{mpsa})_4]$ (X = Cl or Br), $[\text{Ag}_4(\text{mpsa})_4]$ and $[(\text{ZnEt})_2(\text{mpsa})_2]$ [mpsa = 2-N(SiMe₃)-C₅H₃N-6-Me]).

Regarding claims 1, 3, 8, and 10, Engelhardt et al. disclose a binuclear copper(I) complex (page 2859, first paragraph). The reference discloses the complex $[\text{Cu}_2(\text{mpsa})_2]$ which meet instant formulae (1) and (3) wherein R3 and R3' are trimethylsilyl groups and the nitrogen not directly bound to R3 or R3' is part of a pyridine ring. The reference discloses crystals of the copper complex (X-Ray Crystal Structures section, pages 2861-2862). The Cu⁺-Cu distance is 2.4 angstroms (page 2862, table 2) and that the copper ions are monovalent (page 2859, first paragraph). While the reference does not disclose light-emitting properties of the complex, this complex is the same as disclosed in the present specification (page 30, exemplary compound 1134) and will inherently have the same properties. The only positive limitation of the claimed device is a luminescent layer, and the only positive limitation of the luminescent layer is a binuclear copper complex. Therefore given that the copper complex of Engelhardt et al. meets the claimed binuclear complex and will inherently be light-emitting the crystals of Engelhardt et al. are considered to meet the claim limitations.

Regarding claim 12, Engelhardt et al. disclose all the claim limitations as set forth above. Additionally the reference discloses crystals of the copper complex (X-Ray Crystal Structures section, pages 2861-2862). Given that 100% is a part of 100% the present claim limitation is considered to be met.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL WILSON whose telephone number is (571)

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270-3882. The examiner can normally be reached on Monday-Thursday, 7:30-5:00PM EST, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

MHW